Emergency Management System (EMS): Android Based Rescue Application Using Vertical Partitioning For Data Security

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Abstract— This application is useful for communicating during any emergency or disaster, when any emergency occurs this is very important for both victim and rescue team. To get fast response in any critical condition infrastructure, wired and other medium are often lost. In this paper we present Emergency Management System a self-learning System based on ad-hoc System. This application enables smart phone which based on ad-hoc system to communicate during disaster time over Wi-Fi. EMS smart phone establish communication using sophisticated mechanism which performs a transparent classification and match the request to peers in ad-hoc network. Matching the request to reach the best matching use. These systems enable or allow best peers matching across the ad-hoc network. As per hop-by-hop basis. In timely and power conservative manner. We tested the system using android mobile phone with GPS on the phone. Location updates are sent with each request. The EMS client is fully implemented as smart phone application or Android application on top of Haggle middleware. The EMS system consist of EMS server, which is only when communication available before and after disaster. Server is used for maintaining records of user, creating user's profiles. Storing and updating user profile whenever communication occurs it will restored.

Key words: Timeserving Network, Ad-hoc application, Vertical Partitioning, GPS, flood, storm, accident, earthquake, android, disaster recovery, fire

I. INTRODUCTION

In any type of emergency or disaster when communication media may no longer available, not accepting communication when it is needed. There are some examples of recently happened disasters such as Indian Ocean, Tsunamis in Japan and Haitian earthquake caused by damage, have huge loss of life, which needs immediate solutions from rescue team. According to deep research research-team design very effective system that gives fast response in timely manner in any emergency case, that is essential to Humanitarian Information System[4] also for management of operations using android technology[5].

When it needs co-ordination and effective management of operations between victim and rescue team, there needs communication media available at any time. All requests send to rescue team are re-classified at receiver side and when the best match found for that particular request is forwarded further. In this paper we are using vertical partitioning to make user data secure and automatically partitioned into two different databases such as user profile and another is admin data i.e. request and response send by admin and user.

The EMS System is totally implemented as an android application which used Haggle middleware [5][6] for content forwarding and expose functionality. In short EMS is for immediate response from the rescue team in any type of emergency. Smartphone's/android phone are used in different sectors such as business, healthcare, social networks, safety and transport. For enabling related application to consider different domains, a set of embedded sensors such as accelerometer, compass, gyroscope, GPS, and camera are directly included to Smartphone's[3]. Smartphone's are also capable to record useful data like location & other environment details and continuously upload it to particular server. Based on such location traces and also tagging the activities, (such as walking, biking, driving, etc.)

The person who is in emergency or any other person at the emergency site can call the EMS for help. The system works on the Client-Server basis, in that the client send the request to the server and server responds to the client request by providing services. Any person can use this system in case of any emergencies. The system works as way, that the victims will receive help in the form of police, ambulances or fire-brigades depending on the situation.

II. EXISTING SYSTEM

A. *9-1-1:*

(1) It is a telephone number which provide help in emergency it's for North America.
(2) Whenever we dial 911 or call 911 number we can get connected to emergency center which called as PASP (Public Safety Answering Point) which gives us immediate response to the victim's location in case of emergency.
(3) For gathering details about number and address of caller it maps phone number of caller with an address in database. This is called as Automatic Location Identification (ALI).
(4) Local companies are working for maintaining database.

B. *Limitations of 9-1-1:*

(1) In 911 systems it is very difficult to find the exact location of caller using PASP and ALI.
(2) According to increasing population it needs lots of manpower. It is costly system as compare to EMS.
(3) 911 systems require $15 to $30 per annual where EMS system is totally free.

C. *1-0-0/1-0-8:*

(1) In India 108 is a free telephone number for providing emergency service like police, fire, ambulance or medical.
(2) 100 are used in India for calling police in case of emergency.

D. Limitations of 1-0-0/1-0-8:

(1) It gathers the caller information like location and emergency type verbally.
(2) It will take more time to give response. The response time depends on distance between victim and police.
(3) Finding location of victim is very difficult.

III. PROPOSED SYSTEM

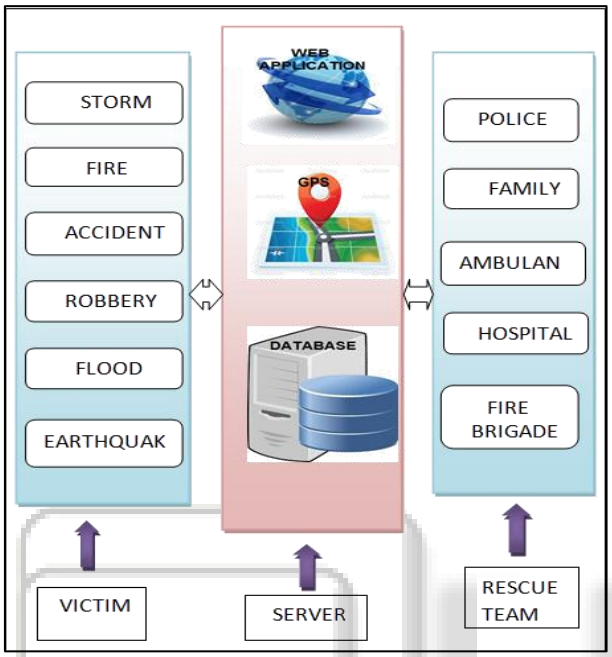

Fig. 1: System Architecture

This is proposed system of EMS System which is fully implemented on android phone. Android phone having different options like fire, flood, storm, accident, police, earthquake. Whenever we sucked in any type of emergency we can touch to the option which is in our android phone according to our emergency.

Then GPS (Global Positioning System) placed in our android application trace the victim's location and send the type of emergency and location through the web application to the admin. Admin check the location of user and find nearest rescue team for victim and send them to help the victim in emergency.

Admin maintain the database of user's profile and request and response message. Admin can add, delete and modify database. User profile and request-response message are two types of database stored in two different databases because user profile is confidential data which needs security. For partitioning databases into two different types we are using vertical partitioning technique [3].

A. User Application:

User Raise the issue in case of any emergency from his Android Application with description and nature of issue Severity. User's location tracking is done with the help of GPS is OFF then location tracking is done in Network mode. All the details of user like Title, Description, Priority and Current location report is send to the server for further assistance. Server respond location based Emergency Contact Numbers to the user application.

B. Admin Application:

Admin gets notifications n his Android application with Emergency Issues. Admin can also view the person details and his/her location that has raised the issue. Admin can view the optimal path on Google map with marker to reach the victim who raised the issue in case of emergency. After resolving the issue, admin can marked the issue as resolved with certain comments.

C. Web Based Application for Reporting:

Web Application is useful for generating the reports such as, Area wise issues report, Priority wise issues report, Location wise issues report.

IV. CONCLUSION

Thus we have implemented a smart phone based platform for ad-hoc communication as well as used for establish communication during disaster when no other communication media exists. This system gives fast response to victim as compare to other services in less cost or totally free.

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